Appendix I
Electric and Magnetic Field Calculations

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1.0 INTRODUCTION

Electric and magnetic fields (EMF) were calculated using the Bonneville Power Administration Corona and Field Effects program under worst-case conditions. These conditions result in the calculation of the highest electric and magnetic fields that would be expected adjacent to the Right-of-Way (ROW). The study models the single-circuit 220kV project line between the Solar One substation and the planned 220kV switchyard addition to Southern California Edison's (SCE) Pisgah Substation. The case is modeled as follows:

- Single-circuit 220kV line with the circuit loaded to 850MW at 0.90 power factor.

The chosen phasing arrangement is a standard arrangement in the industry so that line workers understand the location of the phases for worker safety from shock hazard.

1.1 ASSUMPTIONS FOR MAGNETIC FIELD CALCULATIONS

- Maximum current (2480 amps/phase) available from the project at the proposed project output of 850MW on the transmission line and at the minimum plant voltage.
- Maximum current calculated using the plant output at 0.90 power factor.
- Expected single-circuit, double bundle for the line connecting the project to the SCE Pisgah Substation.
- Maximum conductor sag resulting in minimum conductor ground clearance of the Solar 1 line and all lines in the adjacent corridor.
- All calculations are made for fields one meter from the ground.

1.2 ASSUMPTIONS FOR ELECTRIC FIELD CALCULATIONS

- Maximum expected operating voltage of 242kV. Nominal operating voltage of 220kV.
- Expected single-circuit, double bundle for the single-circuit line connecting the project to the SCE Pisgah Substation.
- Maximum conductor sag resulting in minimum conductor ground clearance of the new Solar One line and all lines in the adjacent corridor.
- All calculations are made for fields one meter from the ground.

1.3 FIGURES

The following figures are included in this Appendix I:

- Figure I-1 depicts the predicted magnetic field strength for the recommended phasing under worst-case conditions for the single-circuit line between the Solar One Substation and the SCE Pisgah Substation.
- Figure I-2 depicts the predicted electric field strength for the recommended phasing under worst-case conditions for the single-circuit line between the Solar One Substation and the SCE Pisgah Substation.

2.0 EMF MODELING RESULTS

The chosen phasing arrangement for the new transmission line resulted in higher magnetic fields than existing within the ROW and in magnetic fields slightly higher or about the same as existing fields at the ROW edge.

FIGURE I-1 MAGNETIC FIELD: SOLAR ONE SINGLE-CIRCUIT INTERCONNECT LINE

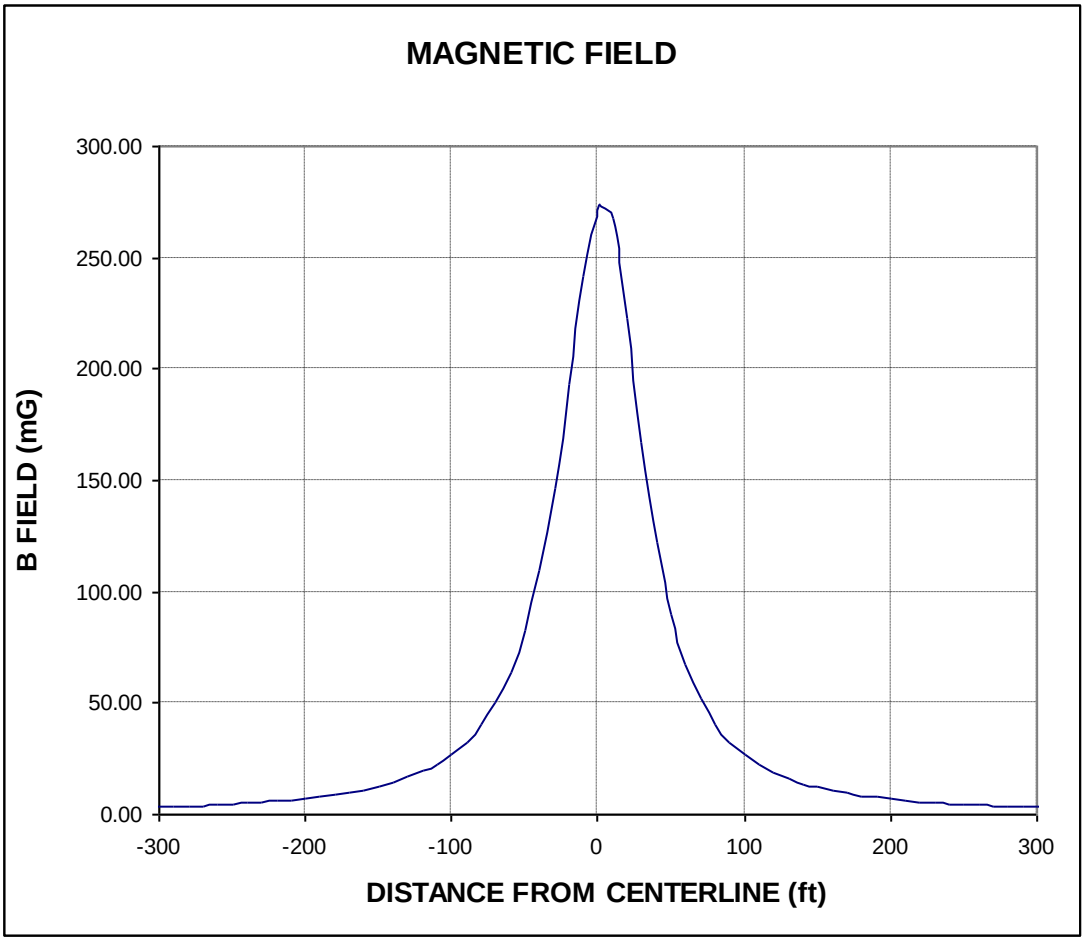

FIGURE I-2 ELECTRIC FIELD: SOLAR ONE SINGLE-CIRCUIT INTERCONNECT LINE